VOL. 541, NO. 1+2 JOURNAL OF CHROMATOGRAPHY MARCH 22, 1991

# CONTENTS

*(Abstracts/Contents Lists published in Analytical Abstracts, Biochemical Abstracts, Biological Abstracts, Chemical Abstracts, Chemical Titles, Chromatography Abstracts, Current Contents/Life Sciences, Current Contents/Physical, Chemical & Earth Sciences, Deep-Sea Research/Part B: Oceanographic Literature Review, Excerpta Medica, Index Medicus, Mass Spectrometry Bulletin, PASCAL-CNRS, Referativnyi Zhurnal, Research Alert and Science Citation Index)*

## REGULAR PAPERS

*Gas Chromatography*

Computer simulation as an aid in method development for gas chromatography. I. The accurate prediction of separation as a function of experimental conditions
by D. E. Bautz, J. W. Dolan and L. R. Snyder (Lafayette, CA, U.S.A.) (Received November 13th, 1990) . . . 1

Computer simulation as an aid in method development for gas chromatography. II. Changes in band spacing as a function of temperature
by J. W. Dolan, L. R. Snyder and D. E. Bautz (Lafayette, CA, U.S.A.) (Received November 13th, 1990) . . . 21

Computer simulation as an aid in method development for gas chromatography. III. Examples of its application
by L. R. Snyder, D. E. Bautz and J. W. Dolan (Lafayette, CA, U.S.A.) (Received August 13th, 1990) . . . 35

Computer spreadsheet calculation of the optimum temperature and column lengths for serially coupled capillary gas chromatographic columns
by R. G. Williams and H. D. Mitchell (Kalamazoo, MI, U.S.A.) (Received October 31st, 1990) . . . 59

Application of a hydrogen storage alloy to the determination of trace impurities in high-purity hydrogen by gas chromatography. Group analysis of $C_1$, $C_2$ and $C_3$ hydrocarbons
by H. Ogino and Y. Aomura (Kanagawa, Japan) and T. Hobo (Tokyo, Japan) (Received October 31st, 1990) . . . 75

Determination of monocyclic aromatic hydrocarbons in plant cuticles by gas chromatography–mass spectrometry
by R. Keymeulen, H. van Langenhove and N. Schamp (Ghent, Belgium) (Received October 30th, 1990) . . . 83

Location of double bonds in polyunsaturated fatty acids by gas chromatography–mass spectrometry after 4,4-dimethyloxazoline derivatization
by L. Fay and U. Richli (Lausanne, Switzerland) (Received November 13th, 1990) . . . 89

Determination of peroxyacetyl nitrate, peroxypropionyl nitrate and alkyl nitrates of atmospheric importance using capillary columns
by G. Mineshos, N. Roumelis and S. Glavas (Patras, Greece) (Received October 29th, 1990) 99

Détection spécifique par chromatographie gazeuse–spectrométrie de masse des amines sympathomimétiques urinaires dans le cadre des contrôles antidopage
by A. Franceschini, J. M. Duthel et J. J. Vallon (Lyon, France) (Reçu le 23 novembre 1990) 109

Detection of sarin and soman in a complex airborne matrix by capillary column ammonia chemical ionization gas chromatography–mass spectrometry and gas chromatography–tandem mass spectrometry
by P. A. D'Agostino and L. R. Provost (Medicine Hat, Canada) and P. W. Brooks (Calgary, Canada) (Received December 12th, 1990) . . . 121

*(Continued overleaf)*

Gas chromatographic separations of all 136 tetra- to octa-polychlorinated dibenzo-*p*-dioxins and polychlorinated dibenzofurans on nine different stationary phases
by J. J. Ryan, H. B. S. Conacher, L. G. Panopio, B. P.-Y. Lau and J. A. Hardy (Ottawa, Canada) and Y. Masuda (Fukuoka, Japan) (Received November 27th, 1990) . . . . . 131

Quantitative extraction of linear alkylbenzenesulfonates using supercritical carbon dioxide and a simple device for adding modifiers
by S. B. Hawthorne and D. J. Miller (Grand Forks, ND, U.S.A.) and D. D. Walker, D. E. Whittington and B. L. Moore (Cincinnati, OH, U.S.A.) (Received December 4th, 1990) . 185

*Column Liquid Chromatography*

Effect of the intersection of the individual isotherms in displacement chromatography
by S. Golshan-Shirazi, M. Z. El Fallah and G. Guiochon (Knoxville and Oak Ridge, TN, U.S.A.) (Received October 18th, 1990) . . . . . 195

Sample displacement mode chromatography: purification of proteins by use of a high-performance anion-exchange column
by K. Veeraragavan, A. Bernier and E. Braendli (Montreal, Canada) (Received October 4th, 1990) . . . . . 207

Measurement of lipophilicity indices by reversed-phase high-performance liquid chromatography: comparison of two stationary phases and various eluents
by A. Bechalany, A. Tsantili-Kakoulidou, N. El Tayar and B. Testa (Lausanne, Switzerland) (Received November 15th, 1990) . . . . . 221

Liquid chromatography–mass spectrometry system using column-switching techniques
by N. Asakawa, H. Ohe, M. Tsuno, Y. Nezu, Y. Yoshida and T. Sato (Ibaraki, Japan) (Received October 29th, 1990) . . . . . 231

Ultrasonic nebulizer interface system for coupling liquid chromatography and electrothermal atomic absorption spectrometry
by J. Stupar (Ljubljana, Yugoslavia) and W. Frech (Umeå, Sweden) (Received October 30th, 1990) . . . . . 243

Sensitivity of electrokinetic detection of acidic aromatic nitro derivatives using column as a detector
by R. Vespalec and J. Neča (Brno, Czechoslovakia) (Received October 8th, 1990) . . . . 257

Determination of glycerol in foods by high-performance liquid chromatography with fluorescence detection
by T. Hamano, Y. Mitsuhashi, N. Aoki and S. Yamamoto (Kobe, Japan), S. Tsuji and Y. Ito (Chuo-ku, Japan) and Y. Oji (Kobe, Japan) (Received November 5th, 1990) . . . . . 265

Improvements in automated analysis of catecholamine and related metabolites in biological samples by column-switching high-performance liquid chromatography
by G. Grossi and A. M. Bargossi (Bologna, Italy), C. Lucarelli (Rome, Italy) and R. Paradisi, C. Sprovieri and G. Sprovieri (Bologna, Italy) (Received November 13th, 1990) . . . . . 273

High-performance liquid chromatographic determination of L-3-(3,4-dihydroxyphenyl)-2-methylalanine (α-methyldopa) in human urine and plasma
by C. Lucarelli, P. Betto and G. Ricciarello (Rome, Italy) and G. Grossi (Bologna, Italy) (Received November 3rd, 1990) . . . . . 285

Resolution of 2,3,4,6-tetra-O-acetyl-β-D-glucopyranosylisothiocyanate derivatives of α-methyl amino acid enantiomers by high-performance liquid chromatography
by Z. Tian, T. Hrinyo-Pavlina and R. W. Roeske (Indianapolis, IN, U.S.A.) and P. N. Rao (San Antonio, TX, U.S.A.) (Received November 20th, 1990) . . . . . 297

Comparison of polybutadiene-coated alumina and octadecyl-bonded silica for separations of proteins and peptides by reversed-phase high-performance liquid chromatography
by J. E. Haky and A. Raghani (Boca Raton, FL, U.S.A.) and B. M. Dunn (Gainesville, FL, U.S.A.) (Received November 22nd, 1990) . . . . . 303

Comparison of the isolation of adducts of 2′-deoxycytidine and 2′-deoxyguanosine with phenylglycidyl ether by high-performance liquid chromatography on a reversed-phase column and a polystyrene–divinylbenzene column
by E. van den Eeckhout and J. Coene (Ghent, Belgium), J. Claereboudt (Wilrijk, Belgium), F. Borremans (Ghent, Belgium), M. Claeys (Wilrijk, Belgium), E. Esmans (Antwerp, Belgium) and J. E. Sinsheimer (Ann Arbor, MI, U.S.A.) (Received October 23rd, 1990) . . . . . 317

Model studies on iron(III) ion affinity chromatography. Interaction of immobilized metal ions with nucleotides
by G. Dobrowolska and G. Muszyńska (Warsaw, Poland) and J. Porath (Uppsala, Sweden) (Received November 7th, 1990) . . . . . 333

Use of the 4-methoxy-4′-octyloxytrityl group as an affinity handle for the purification of synthetic oligonucleotides
by K. C. Gupta, R. K. Gaur and P. Sharma (Delhi, India) (Received November 8th, 1990) 341

Enantiomeric separation of substituted 2-aryloxy propionic esters. Application to the determination of the enantiomeric excess in herbicide formulations
by A. Tambuté (Vers-le-Petit, France) and L. Siret, M. Caude and R. Rosset (Paris, France) (Received September 12th, 1990) . . . . . 349

Screening method for phenoxy acid herbicides in ground water by high-performance liquid chromatography of 9-anthryldiazomethane derivatives and fluorescence detection
by T. Suzuki and S. Watanabe (Tokyo, Japan) (Received October 22nd, 1990) . . . . . 359

Rapid and sensitive determination of phenylurea herbicides in water in the presence of their anilines by extraction with a Carbopack cartridge followed by liquid chromatography
by A. Di Corcia and M. Marchetti (Rome, Italy) (Received November 14th, 1990) . . . 365

Separation and detection of styrene–alkyl methacrylate and ethyl methacrylate–butyl methacrylate copolymers by liquid adsorption chromatography using a dichloroethane mobile phase and a UV detector
by S. Mori (Mie, Japan) (Received October 17th, 1990) . . . . . 375

Determination of vitamin $B_{12}$ in multivitamin–multimineral tablets by high-performance liquid chromatography after solid-phase extraction
by J. Dalbacke and I. Dahlquist (Malmö, Sweden) (Received September 28th, 1990) . . . 383

Improvement of chemical analysis of antibiotics. XVII. Application of an amino cartridge to the determination of residual sulphonamide antibacterials in meat, fish and egg
by Y. Ikai, H. Oka, N. Kawamura, J. Hayakawa, M. Yamada, K.-I. Harada and M. Suzuki (Nagoya, Japan) and H. Nakazawa (Tokyo, Japan) (Received October 17th, 1990) . . . 393

Optimization and ruggedness testing of the determination of residues of carbadox and metabolites in products of animal origin. Stability studies in animal tissues
by G. M. Binnendijk, M. M. L. Aerts and H. J. Keukens (Wageningen, The Netherlands) and U. A. Th. Brinkman (Amsterdam, The Netherlands) (Received October 25th, 1990) . . . 401

On-line determination and resolution of verapamil enantiomers by high-performance liquid chromatography with column switching
by Y. Oda, N. Asakawa, T. Kajima, Y. Yoshida and T. Sato (Ibaraki, Japan) (Received October 12th, 1990) . . . . . 411

Determination of molecular size distributions of humic acids by high-performance size-exclusion chromatography
by R. Rausa, E. Mazzolari and V. Calemma (S. Donato Milanese, Italy) (Received October 4th, 1990) . . . . . 419

Determination of non-ionic surfactants with ester groups by high-performance liquid chromatography with post-column derivatization
by Y. Kondoh, A. Yamada and S. Takano (Tochigi, Japan) (Received September 19th, 1990) . . . . . 431

*(Continued overleaf)*

Preconcentration of divalent trace metals on chelating silicas followed by on-line ion chromatography
by D. Chambaz, P. Edder and W. Haerdi (Geneva, Switzerland) (Received October 18th, 1990) . . . . . 443

*Electrophoresis*

Analysis of the soluble proteins in grape must by two-dimensional electrophoresis
by R. González-Lara and L. M. González (Madrid, Spain) (Received October 22nd, 1990) 453

SHORT COMMUNICATIONS

*Gas Chromatography*

Determination of dimethyl sulphate in air by gas chromatography with flame photometric detection
by S. Fukui, M. Morishima, S. Ogawa and Y. Hanazaki (Kyoto, Japan) (Received December 12th, 1990) . . . . . 459

*Column Liquid Chromatography*

Enantiomeric separation of racemic thiosulphinate esters by high-performance liquid chromatography
by R. Bauer, W. Breu, H. Wagner and W. Weigand (Munich, Germany) (Received October 12th, 1990) . . . . . 464

Reversed-phase high-performance liquid chromatography of ketoxime analogues of β-adrenergic blockers
by L. Prokai, A. Simay and N. Bodor (Gainesville, FL, U.S.A.) (Received December 12th, 1990) . . . . . 469

Reversed-phase high-performance liquid chromatography–thermospray mass spectrometry of alprenolol and its ketoxime analogues
by L. Prokai and N. Bodor (Gainesville, FL, U.S.A.) (Received December 12th, 1990) . . 474

*Planar Chromatography*

2-Trichloromethylbenzimidazole, a selective chromogenic reagent for the detection of *o*-phenylenediamine on thin-layer plates
by L. Konopski (Warsaw, Poland) (Received December 5th, 1990) . . . . . 480

*Electrophoresis*

Simultaneous pH and ionic strength effects and buffer selection in capillary electrophoretic techniques
by J. Vindevogel and P. Sandra (Ghent, Belgium) (Received December 10th, 1990) . . . 483

Capillary electrophoresis in [$^2$H]water solution
by P. Camilleri and G. Okafo (Welwyn, U.K.) (Received November 14th, 1990) . . . . . 489

*Author Index* . . . . . 497

*Errata* . . . . . 501

In articles with more than one author, the name of the author to whom correspondence should be addressed is indicated in the article heading by a 6-pointed asterisk (*)